

## **REMARKS**

The Office Action dated April 10, 2009 has been received and carefully noted. The following remarks are submitted as a full and complete response thereto.

### **Status of the Claims**

No claims have been amended, no claims have been cancelled, and no claims have been added. Claims 1, 2, and 4-29 are currently pending and are respectfully submitted for consideration.

Reconsideration and withdrawal of the rejections is respectfully requested in light of the following remarks.

### **Allowable Subject Matter**

The Applicants respectfully thank the Examiner for allowing the subject matter of claim 18-23.

### **Rejection under 35 U.S.C. § 112**

Claim 29 was rejected under 35 U.S.C. §112, first paragraph, for failing to comply with the written description requirement. In particular, the Office Action stated that “claim 29 pertains to a computer program embodied on a computer readable medium.” The Office Action alleged, however, that “there is no support or evidence in the specification for defining a computer program, as well as a computer readable medium”. (See Office Action at page 3, line 2-5). This rejection is respectfully traversed for at least the following reasons.

The written description requirement is governed by §2163.02 of the MPEP, entitled “Standard for Determining Compliance With the Written Description Requirement”, which proceeds by noting that “the courts have described the essential question to be addressed in a description requirement issue in a variety of ways. An objective standard for determining compliance with the written description requirement is, “does the description clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed.” *In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989). Under *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991), to satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date, he or she was in possession of the invention, and that the invention, in that context, is whatever is now claimed. The test for sufficiency of support in a parent application is whether the disclosure of the application relied upon “reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter.” *Ralston Purina Co. v. Far-Mar-Co., Inc.*, 772 F.2d 1570, 1575, 227 USPQ 177, 179 (Fed. Cir. 1985) (quoting *In re Kaslow*, 707 F.2d 1366, 1375, 217 USPQ 1089, 1096 (Fed. Cir. 1983)).

As noted previously, referring to the present application, paragraph [0027] of the detailed description explicitly discloses that the user equipment may be a “computer.” The location estimation techniques described throughout the claim recitations may

certainly be performed on a computer and/or the user equipment. One skilled in the art would readily appreciate that the fundamental components of a computer include a memory, a processor and a software program stored in the memory. Furthermore, one skilled in the art would further appreciate that the operations of a computer include software execution and processing operations. A computer cannot exist without a computer readable medium and a processor. Accordingly, the inclusion of a “computer” in the specification as filed meets the written description requirement as recognized by *In re Gosteli*, since one having ordinary skill in the art would recognize that the processing and execution of software requires a computer readable medium and a processor, as recited in claim 29. Additionally, such an interpretation of a computer would be “reasonable” for a skilled artisan to presume that the computer includes a computer readable medium (*Ralston Purina Co. v. Far-Mar-Co., Inc.*). Therefore, Applicants respectfully submit that the subject matter of claim 29 fully complies with the requirements under the first paragraph of 35 U.S.C. § 112.

Accordingly, withdrawal of the objection is respectfully requested.

#### **Rejections under 35 U.S.C. § 102**

Claims 1, 2, and 4-17, and 24-29 were rejected under 35 U.S.C. §102(e) as being anticipated by Kong (U.S. Patent No. 6,275,186). In particular, the Office Action asserted that Kong discloses all of the elements recited in claims 1, 2, and 4-17, and 24-29. However, this rejection is respectfully traversed for at least the following reasons.

Claim 1, upon which claims 2, 4-17, 24, and 25 are dependent, recites a method. The method includes collecting location information. The method includes selecting at least one of a plurality of different location methods to provide a location estimate the methods comprising using cell identity information. The method includes determining a first location estimate of a mobile device based on the at least one selected location method. The first location estimate is based on a serving base transceiver station. The method includes determining a virtual base station estimate using at least some of the collected location information. The virtual base station estimate is determined based on the first location estimate of the mobile device and direction information of the serving base transceiver station. The method includes providing a second location estimate using one of the different location methods based on the first location estimate and the virtual base station estimate. The second location estimate is a location of the mobile device.

Claim 26 recites a system. The system includes a collecting means for collecting location information. The system includes a selecting means for selecting at least one of a plurality of different location methods to provide a location estimate. The methods uses cell identity information. The system includes a location determining means for determining a first location estimate of a mobile device based on the at least one selected location method. The first location estimate is based on a serving base transceiver station. The system includes an estimate determining means for determining a virtual base station estimate, using one of the different location methods. The virtual base

station estimate is determined based on the first location estimate of the mobile device and direction information of the serving base transceiver station. The system includes a providing means for providing a second location estimate based on at least one of the first location estimate and the virtual base station estimate. The second location estimate is an estimate of the location of the mobile device.

Claim 27 recites a system. The system includes a collector configured to collect location information. The system includes a selector configured to select at least one of a plurality of different location methods to provide a location estimate. The methods use cell identity information. The system includes a determiner configured to determine a first location estimate of a mobile device based on the at least one selected location method. The first location estimate is based on a serving base transceiver station. The determiner is further configured to determine a virtual base station estimate using at least some of the collected location information. The virtual base station estimate is determined based on the first location estimate of the mobile device and direction information of the serving base transceiver station. The system includes a provider configured to provide a second location estimate, using one of the different location methods based on the first location estimate and the virtual base station estimate. The second location estimate is an estimate of the location of the mobile device.

Claim 28 recites an apparatus. The apparatus includes a collector configured to collect location information. The apparatus includes a selector configured to select at

least one of a plurality of different location methods to provide a location estimate. The methods uses cell identity information. The apparatus includes a determiner configured to determine a first location estimate of the apparatus based on the at least one selected location method. The first location estimate is based on a serving base transceiver station. The determiner is further configured to determine a virtual base station estimate based on the first location estimate of the apparatus and direction information of the serving base transceiver station. The apparatus includes a provider configured to provide a second location estimate, using one of the different location methods based on the first estimate and the virtual base station estimate. The second location estimate is an estimate of the location of the apparatus.

Claim 29 recites a computer program embodied on a computer readable medium. The computer program configured to control a processor to perform collecting location information. The processor selects at least one of a plurality of different location methods to provide a location estimate the location methods. The methods use cell identity information. The processor determines a first location estimate of a mobile device based on the at least one selected location method. The first location estimate is based on a serving base transceiver station. The processor determines a virtual base station estimate using at least some of the collected location information. The virtual base station estimate being determined based on the first location estimate of the mobile device and direction information of the serving base transceiver station. The processor

provides a second location estimate using one of the different location methods based on the first location estimate and the virtual base station estimate. The second location estimate is a location of the mobile device.

As will be discussed below, Applicants respectfully submit that Kong fails to disclose, either expressly or inherently, all of the elements of claims 1, 2, and 4-17, and 24-29.

Kong is related to a device and a method that locates a mobile station in a mobile communication system. In particular, Kong describes, amongst other things, locating a mobile station by measuring a time differences of arrivals and signal-to-interference ratio of forward pilots received from neighbor base stations in a mobile communication system operated in synchronization. (*See Kong at col. 1, lines 55-59*). According to Kong, a mobile station location can be determined by three methods: (1) when at least three pilot signals are received from different base stations; (2) two pilots signals are determined from different base stations; and (3) two pilot signals are received from one base station. (*See Kong at col. 10, lines 48-53*).

However, it is submitted that Kong does not teach the feature of a “virtual base station”. *See* for example claim 1, which recites, in part,

determining a virtual base station estimate using at least some of the collected location information, said virtual base station estimate being determined based on the first location estimate of the mobile device and direction information of the serving base transceiver station

(claim 1, lines 8-11).

The Office Action took the position that the ‘direction’ information in Kong is construed as being the “virtual base station estimate” of claim 1. In an attempt to support this position, the Office Action has divided the method of Kong in a manner that fails to consider the remaining terms of the pending claims. For example, the Office Action alleged that the feature of “determining a first location estimate of a mobile device...” (claim 1, line 5) is anticipated by the feature “a storage [that] calculates SIR of pilot signals based on information about sector direction, sector-cross section, and antenna transmission power pattern of the serving BS” (See Office Action at page 4, lines 3-7).

However, this allegation is incorrect because the signal-to-interference ratio (SIR) is not “a first location estimate of a mobile device” (claim 1, line 5). Instead, the SIR is simply information that allows a direction to be determined, which must be combined with further information, i.e., distance, in order to provide a location estimate. (See Kong at col. 11, lines 13-15). Therefore, the SIR in Kong by itself cannot be considered to be a “location estimate” (claim 1, line 5).

Continuing with claim 1, it is recited, in part, “determining a virtual base station estimate...based on the first location estimate of the mobile device and direction information of the serving base transceiver station” (claim 1, lines 8-11, emphasis added). The Office Action took the position that Kong determines the virtual base station (determination of direction) based on the SIR information, which allows the direction to



be determined, combined with direction information that has been determined from the SIR information. (*See* Office Action at page 4, lines 8-13).

This position is logically incorrect because there is no suggestion in Kong that provides reasons why the direction should be calculated based on the already determined direction plus SIR information. Rather, Kong describes that SIR information should be determined and used to calculate a direction. (*See* Kong at col. 11). The direction can be combined distance information, which is calculated from time of flight measurements (RTD), to determine a location for the mobile device.

In claim 1, however, “a first location estimate of a mobile device” (claim 1, line 5) is determined “based on a serving base transceiver station” (claim 1, lines 6-7). This “first location estimate of the mobile device and direction information of the serving base transceiver station” (claim 1, lines 9-11) is used to determine an estimate of the “virtual base station estimate” (claim 1, line 8). These features of claim 1 are clearly not disclosed by Kong because Kong merely describes the use of SIR information to calculate a direction.

With respect to the limitation “providing a second location estimate using one of said different location methods based on the first location estimate and the virtual base station estimate, said second location estimate being a location of the mobile device” in claim 1, the Office Action alleged that this limitation is disclosed by Kong. In particular, the Office Action alleged that Kong teaches a second location estimate using one of the

different location methods. (See Office Action, page 4, lines 14-17). However, the location methods taught by Kong are specific to the number of base stations from which pilot signals are received by the mobile station. There is no suggestion in Kong of “providing a second location estimate [of a mobile device] using one of said different location methods based on the first location estimate and the virtual base station estimate” (claim 1, lines 12-14).

Therefore, for at least the reasons presented above, Applicants respectfully submit that the subject matter of claim 1 patentably distinguishes over Kong. Independent claims 26-29, which each have their own scope, recite similar features as claim 1. Therefore, Applicants respectfully submit that the subject matter of claims 26-29 patentably distinguish over Kong for reasons similar to those discussed above with respect to claim 1.

Since the dependent claims inherit the patentable features of base claim 1, Applicants respectfully submit that the subject matter of the dependent claims patentably distinguish over Kong.

Accordingly, withdrawal of the rejection is respectfully requested.

### **Conclusion**

For at least the reasons discussed above, Applicants respectfully submit that none of the cited references, whether considered alone or in combination, disclose, either

expressly, implicitly or inherently, all of the elements of the claimed invention. These distinctions are more than sufficient to render the claimed invention unanticipated and unobvious. It is therefore respectfully requested that all of claims 1, 2, and 4-29 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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